REMARKS/ARGUMENTS

The claims are 5 and 8-20.

Claims 1 and 2 have been canceled in favor of new claim 12, to better define the invention. Accordingly, claims 8-11, which previously depended on claim 1, have been amended to depend on new claim 12.

In addition, claims 3-4 and 6-7 have been canceled, and claim 5, which previously depend on claim 3, has been amended to depend on claim 12. Claim 5 has also been amended to delete reference to the cage guide ridges that engage in centering grooves of the inner hub, which are formed in the ridges between the raceways. These claims have also been amended to improve their form.

New claim 13 has been added, which incorporates the features of original claims 1 and 5. New claim 17 has also been added, which incorporates the features of original claim 1 with the feature where the cage is pivotable with respect to only one of the joint parts (outer hub or inner hub). New dependent claims 14 and 18 are similar to original claim 2, but dependent on new claims 13

and 17, respectively. New dependent claims 15, 16, and 19, 20, dependent on claims 13 and 17, respectively, have also been added directed to the features of the shape of the raceway differing from the shape of the centering grooves and to the features of the size of the cross-section of the centering grooves being smaller than the size of the cross-section of the raceway, respectively, as shown for example in FIG. 1.

Support for the claims may be found, *inter alia*, in the original claims and drawings. Reconsideration is expressly requested.

The claims were objected to as failing to comply with 37 CFR 1.75(i) because elements of the claims were not separated by line indentation because the Examiner wanted the limitation "the ridges (17)" in claim 5 changed to --ridges (17)--. In response, Applicants have, *inter alia*, canceled claims 1-4 and 6-7, have amended claims 5 and 8-11, and have added new claims 12-20 to improve the form of the claims. It is respectfully submitted that all currently pending claims fully comply with 37 CFR 1.75(i), and Applicants respectfully request that the Examiner's objection on these formal grounds be withdrawn.

Claims 1-3 and 8-11 were rejected under 35 U.S.C. 102(b) as being anticipated by *Cull et al., U.S. Patent No. 3,452,558* or *Cermak et al. U.S. Patent Application Publication No. 2001/0018369*. Claims 1-3, 8, 9 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by *Perrow U.S. Patent Application Publication No. 2001/0049309*. Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Cermak et al.* in view of *Croset U.S. Patent No. 3,488,979*.

Essentially, the Examiner's position was (1) that each of *Cull et al., Perrow and Cermak et al.* discloses the sliding articulation recited in the claims except for the cage having guide ridges that engage in entering grooves in ridges between the raceways of the inner hub, (2) that *Croset* discloses this feature, and (3) that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the sliding articulation of *Cermak et al.* by providing the case with guide ridges engaging centering grooves in the inner hub in order to provide a means to maintain the cage in its correct position, which was said to be taught by *Croset*.

This rejection is respectfully traversed.

As set forth in new claims 12, 13 and 17, Applicants' invention provides a sliding articulation having an axis that includes an outer hub, an inner hub, a plurality of balls, and a cage disposed between the outer hub and the inner hub guiding the balls in an axial direction. The outer hub encloses a cavity and includes an inner surface and a plurality of outer hub raceways in the inner surface. The outer hub raceways extending parallel to the axis. The inner hub is accommodated in the cavity and includes an outer surface and a plurality of inner hub raceways on the outer surface, with the inner hub raceways extending parallel to the axis and lying opposite the outer hub raceways. Each ball of the sliding articulation is accommodated in a respective pair of an outer hub raceway and an inner hub raceway. The inner hub is freely displaceable relative to the outer hub in the axial direction between a first stop and a second stop over a first distance by rolling the balls in the inner and outer hub raceways and is displaceable over a second distance by sliding the balls in the inner and outer hub raceways.

As recited in new claim 12, the cage is freely displaceable relative to the inner hub and relative to the outer hub in the axial direction. As recited in new claim 13, the cage has cage guide ridges that engage in centering grooves of the inner hub, which are formed in ridges between the raceway. As recited in new claim 17, the cage is pivotable with respect to only one of the outer hub or the inner hub.

In this way, Applicants' invention provides a sliding articulation which allows the relative movement between the inner hub and the outer hub that is required for assembly yet reduces the friction in operation.

None of the cited references discloses or suggests a sliding articulation having the structure recited in new claims 12, 13 and 17, or teaches the benefits that are achieved from that structure. *Cull et al.* discloses a universal joint in which any actual movement of the balls may take place only with a pure rolling action without any skidding of the balls in the tracks. See col. 4, lines 25-51 of *Cull et al.* Thus, the feature of the inner hub being clearly displaceable relative to the outer hub over an additional distance by means of sliding of the balls in the raceway

as recited in new claims 12, 13 and 20 is nowhere disclosed or suggested in *Cull et al.*

In addition, with respect to Applicants' new claim 12, *Cull et al.*'s ball cage 7 is not freely displaceable relative to both the inner hub and the outer hub. In the embodiment of FIGS. 1 to 4 of *Cull et al.* the axial movement of the ball cage relative to the inner hub is controlled by a guide member 13, which has a part-spherical external and convex control surface 14, which prevents the cage from being freely displaceable relative to the inner hub. The same is true for the embodiment shown in FIGS. 5 and 6 of *Cull et al.* in which a guide member 13 in the form of a stud is provided having a control surface 14, which prevents the cage from being freely displaceable relative to the inner hub.

In addition, as the Examiner has apparently recognized, there is no disclosure or suggestion in *Cull et al.* of a sliding articulation wherein the cage has cage guide ridges that engage in centering grooves of the inner hub, which are formed in ridges between the raceways as recited in Applicants' new claim 13. Further, it can be seen from the figures of *Cull et al.* that the cage is pivotable with respect to both joint parts, i.e. the inner hub and the outer hub, and thus, there is no disclosure or

suggestion in *Cull et al.* of a sliding articulation wherein the cage is pivotable with respect to only one of the outer hub or inner hub as recited in Applicants' new claim 17.

Cermak et al. relates to a plunging assembly for a drive shaft. It is respectfully submitted that an articulation or joint as defined in Applicants' new claims 12, 13 or 17 is nowhere disclosed or suggested by *Cermak et al.*

It is respectfully submitted, moreover, that a person skilled in the art differentiates between a plunging assembly as is shown in *Cermak et al.*, which allows an axial relative movement between the inner part and the outer part but strictly prevents any relative angular movement therebetween on the one hand and a joint or articulation on the other hand allowing both a relative axial movement and a relative angular movement of an inner part and an outer part. Thus, it is respectfully submitted that the plunging assembly of *Cermak et al.* is not a sliding articulation as defined in Applicants' new claims 12, 13 and 17, which is made manifest in that in Applicants' sliding articulation, each ball is accommodated in a respective pair of an outer hub raceway and an inner hub raceway. In other words, Applicants' sliding articulation as recited in new claims 12, 13 and 17 is provided with one single

ball in each pair of raceways, thus allowing an angular movement. In contrast, a plunging assembly as shown in *Cermak et al.* has several balls in each pair of raceways, thus prohibiting any angular movement.

Moreover, there is no disclosure or suggestion in *Cermak et al.* of centering grooves formed in ridges between the raceways for guiding the cage as recited in Applicants' new claim 13. There is also no disclosure or suggestion in *Cermak et al.* of the cage being pivotable with respect to one of the joint parts as recited in Applicants' new claim 17.

Perrow discloses a constant velocity joint having two cages, an intermediate cage 48 an outer cage 38. These two cages are locked against axial shifting of movement relative to each other by matched spherical surfaces. See paragraph 0029 of *Perrow*. Further as defined in paragraph 0032 of *Perrow*, the axial movement of the two cages is limited at least in one direction with respect to the inner hub 24 of the joint. Thus, the cage is not freely displaceable relative to both the inner hub and the outer hub as recited in Applicants' new claim 12. In addition, there is no disclosure or suggestion in *Perrow* of cage guide ridges that engage in centering grooves of the inner hub, which are formed in ridges

between the raceways or a cage pivotable with respect to one of the inner hub or the outer hub as recited in new claims 13 and 17, respectively.

The secondary reference to *Croset*, which has been cited in combination with *Cermak et al.* in connection with claim 5, has been considered but is believed to be no more relevant. *Croset* discloses a universal joint, which as is apparent from FIG. 1 of *Croset*, is a fixed joint not allowing any axial movement between the inner hub and the outer hub at all. In addition, there are provided three levers 60A, 60B, 60C in *Croset*, which it is respectfully submitted do not constitute a ridge as recited in original claim 5 and which now appears in new claim 13. Moreover, these levers of *Croset* serve to prevent any axial movement of the cage with respect to the inner hub and the outer hub. Thus, *Croset* and *Cermak et al.* refer to opposite technology excluding each other so that it is respectfully submitted that a person skilled in the art would have no reason to and in fact would not have combined these two documents as suggested by the Examiner.

Accordingly, it is respectfully submitted that new claims 12, 13 and 17, together with claims 5 and 8-11, claims 14-16, and claims 18-20, which depend directly or indirectly on claims 12, 13

or 17, respectively, contain patentable and unobvious subject matter.

In summary, claims 1-4, 6, and 7 have been canceled, claims 5, 8-11 have been amended, and new claims 12-20 have been added. In view of the foregoing, it is respectfully requested that the claims be allowed and that this case be passed to issue.

Respectfully submitted,
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Enclosure: Copy of Petition - 3 month extension of time

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 29, 2008.

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